

<110> Jager, Dirk
Scanlan, Matthew
Gure, Ali
Jager, Elke
Knuth, Alexander
Old, Lloyd
Chen, Yao-tseng

<120> Isolated Nucleic Acid Molecules Encoding Cancer Associated Antigens, the Antigens per se, and Uses Thereof

<130> LUD 5615

<140> 09/451,739

<141> 1999-11-30

<160> 19

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<213> Homo sapiens
<220>
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<212> DNA

<213> Homo sapiens

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| agoagtgatc | ccgggcccgt | ggctcggggc | cggggctgca | gttcggaccg | cctcccgccg | 120 |
| cccqccgggg | ctccggagaca | gtttcaggcc | gcatttttc | tgtaccgggg | gtggggccgc | 180 |
| gctgtggccgt | ggaaacacat | ctctggggat | cttagacgat | gttacggatg | cttcagtcgc | 240 |
| gagacacaaacg | ggggccgacaa | gtggggat | ctgcactgtg | tgcacccggc | gtgtatccgc | 300 |
| agccacgggc | tggccgacqa | gaatgtccag | atcgtggatc | atgtgggtgg | gttgggtggag | 360 |
| aaccgcacgc | ggcagggtgg | caagccacgt | gagctgttcc | aqggccggca | ggagctgggc | 420 |
| gacacatgg | gcaacacaggg | caagggttgc | qcggacacgg | ccaaatggcg | tgcggtagcg | 480 |
| cagtctgaca | agcccaacag | caaggccgtca | cgggggcagc | gcaacaaacg | qaaccgttag | 540 |
| aacgcgttca | qcaacacacg | ccacgcacac | ggggccctcg | gcaacacccaa | ggagaagaag | 600 |
| gccaagaccc | ccaaagaaagaa | gaaggccctcc | aaggccaaagg | cggtggcgaga | ggggcccccct | 660 |
| ggccgaccc | ccatccqaccc | caacgaaaccc | acgtactgtc | tgttgcaccca | ggtctccat | 720 |
| ggggagatga | tcggctggca | caacgacgag | tgcacccatcg | atgtggttcc | cttctctgtgc | 780 |
| ctggggqctca | atcataaaacc | caagggcaag | tggtaactgtc | ccaaatgtccg | ggggggagaac | 840 |
| gagaagacca | tggacaaaac | ccttggagaaa | tccaaaaaaag | agayggctta | caacaggtag | 900 |
| tttgggaca | ggggccctgtt | gttggggagga | caaaataaaac | cgtgtatttt | ttacattgt | 960 |
| gcctttgtt | agggttcaagg | atgttaaat | gtatattttt | aaagaatgtt | agaaaaggaa | 1020 |
| ccatccctt | catagggatg | gcagtgtatc | tgttttgcc | tttgttttcat | ttgttacacgt | 1080 |
| gttacaacaa | atgtggatgt | ggatcagcat | ttttagaaact | ccaaatatacg | gtttgtattca | 1140 |
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<212> DNA

<213> Homo sapiens

<220>

<400> 3

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| aqtqacacgc | aaggccacgc | ccccgcgagg | ggccggctcg | acccgcgcgc | ccccaggggcc | 120 |
| tggggacgaga | tccfqaqgga | gttqacacgag | tqctacgago | qcttcagtcg | cgagacacagac | 180 |
| ggggcqeqeaa | aqeqqccqgat | qctqactgt | gtgcacggcg | cgcttqatcg | cagccaggag | 240 |
| ctggggcgaac | agaqasatcga | qatqgtggac | caqatgggtgg | actgtggtgg | gaaccgcacg | 300 |
| ggccqagggtt | acagccacgt | ggagctqtcc | gaggccgcagc | agggatgtgg | cgacacacagc | 360 |
| ggcaacacgc | qcaagggttgg | ggccggacacgg | cccaaaaggcc | Agggggcagc | cgaggctgc | 420 |
| aagcccaaca | qcaacgcgtc | acggccggcag | cgcnacaacg | agaacacgtga | gaacgcgtcc | 480 |
| agcaacccacg | accacgcaga | cgggccctcg | ggcacaccca | aygaaqaaagaa | ggccaaagacc | 540 |
| tccaaagaaga | agaacgcgtc | caaggccaaag | ggggagcgag | agggctcccc | tgcggaccc | 600 |
| ccatcgacc | ccaaacgaaacc | ctgttactgt | ctgttgcaccc | atgttcttcata | tggggagatg | 660 |
| atcggttgcg | acaacgcacg | gttgcacccatc | gagtgttcc | acttctctgt | cgttggggctc | 720 |
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<210> 4

<211> 857

<212> DNA

<213> Homo sapiens

<400> 4

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| ctcgccgatc | tccatctt | ctggggctcg | gcacttagaa | gcagttcccc | tctcaaggccc | 120 |
| ctttgttcc | aaqccgttcc | aaactgtgtz | ccgggagacq | acacaaagggg | aggggcggtga | 180 |
| ggatggccgc | aqgcccgggg | ccggccatgg | ctgttggggat | tgtgtgtccg | ccggccggaaat | 240 |
| ggagatctg | aaaggactag | acggatgtcta | cgagcgttcc | atgtcgatgaga | caagacgggg | 300 |

gcagaagcgg cggatgtgc actgtgtgca ggcgcgcgtg atccgcagcc aggagctggg 360
 cgacgagaag atccagatcg tgagccagat ggtggagctg gtggagaacc gcacgcggca 420
 ggtggacaaac cacgtggagc tggcggaggc gcagcaggag ctggcgcaca cagcgggcaa 480
 cagcggcaag gctggcgggg acaggccaa aggagaggcg gcagcgcagg ctgacaaagcc 540
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 ccacgacac gacgacggcg cctcgggcact acccaaggag aagaaggcca agacctccaa 660
 gaagaagaag cgctccaaagg caaggcggga gcgagaggcg tccccctggcg acctcccat 720
 cgaccccaac gaacccacgt actgtctgtg caaccaggc tccatgggg agatgatcg 780
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<210> 5

<211> 279

<212> PRT

<213> Homo sapiens

<400> 5

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| 1 | | | | | | | | | 10 | | | | | 15 | |
| Glu | Asp | Tyr | Leu | Asp | Ser | Ile | Glu | Ser | Leu | Pro | Phe | Asp | Leu | Gln | Arg |
| | | | | | | | | | 20 | | | | | 25 | 30 |
| Asn | Val | Ser | Leu | Met | Arg | Glu | Ile | Asp | Ala | Lys | Tyr | Gln | Glu | Ile | Leu |
| | | | | | | | | | 35 | | | | | 40 | 45 |
| Lys | Glu | Leu | Asp | Glu | Cys | Tyr | Glu | Arg | Phe | Ser | Arg | Glu | Thr | Asp | Gly |
| | | | | | | | | | 50 | | | | | 55 | 60 |
| Ala | Gln | Lys | Arg | Arg | Met | Leu | His | Cys | Val | Gln | Arg | Ala | Leu | Ile | Arg |
| | | | | | | | | | 65 | | | | | 70 | 75 |
| Ser | Gln | Glu | Leu | Gly | Asp | Glu | Lys | Ile | Gln | Ile | Val | Ser | Gln | Met | Val |
| | | | | | | | | | 80 | | | | | 85 | 90 |
| Glu | Leu | Val | Glu | Asn | Arg | Thz | Arg | Gln | Val | Asp | Ser | His | Val | Glu | Leu |
| | | | | | | | | | 100 | | | | | 105 | 110 |
| Phe | Glu | Ala | Gln | Glu | Leu | Gly | Asp | Thr | Val | Gly | Asn | Ser | Gly | Lys | |
| | | | | | | | | | 115 | | | | | 120 | 125 |
| Val | Gly | Ala | Asp | Arg | Fro | Asn | Gly | Asp | Ala | Val | Ala | Gln | Ser | Asp | Lys |
| | | | | | | | | | 130 | | | | | 135 | 140 |
| Pro | Asn | Ser | Lys | Arg | Ser | Arg | Arg | Gln | Arg | Asn | Asn | Glu | Asn | Arg | Glu |
| | | | | | | | | | 145 | | | | | 150 | 155 |
| Asn | Ala | Ser | Ser | Asn | Asp | His | Asp | Asp | Gly | Ala | Ser | Gly | Thr | Pro | |
| | | | | | | | | | 165 | | | | | 170 | 175 |
| Lys | Glu | Lys | Lys | Ala | Lys | Thr | Ser | Lys | Lys | Lys | Arg | Ser | Lys | Ala | |
| | | | | | | | | | 180 | | | | | 185 | 190 |
| Lys | Ala | Glu | Arg | Glu | Ala | Ser | Pro | Ala | Asp | Leu | Pro | Ile | Asp | Pro | Asn |
| | | | | | | | | | 195 | | | | | 200 | 205 |
| Glu | Pro | Thr | Tyr | Cys | Leu | Cys | Asn | Gln | Val | Ser | Tyr | Gly | Glu | Met | Ile |
| | | | | | | | | | 210 | | | | | 215 | 220 |
| Gly | Cys | Asp | Asn | Asp | Glu | Cys | Pro | Ile | Glu | Trp | Phe | His | Phe | Ser | Cys |
| | | | | | | | | | 225 | | | | | 230 | 235 |
| Val | Gly | Leu | Asn | His | Lys | Pro | Lys | Gly | Lys | Trp | Tyr | Cys | Pro | Lys | Cys |
| | | | | | | | | | 245 | | | | | 250 | 255 |
| Arg | Gly | Glu | Asn | Glu | Lys | Thr | Met | Asp | Lys | Ala | Leu | Glu | Lys | Ser | Lys |
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| Lys | Glu | Arg | Ala | Tyr | Asn | Arg | | | | | | | | | 275 |

<210> 6

<211> 210

<212> PRT

<213> Homo sapiens

<220>

<400> 6

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 35 40 45
 Glu Leu Gly Asp Thr Val Gly Asn Ser Gly Val Gly Ala Asp Arg
 50 55 60
 Pro Asn Gly Asp Ala Val Ala Gln Ser Asp Lys Pro Asn Ser Lys Arg
 65 70 75 80
 Ser Arg Arg Gln Arg Asn Asn Gln Asn Arg Glu Asn Ala Ser Ser Asn
 85 90 95
 His Asp His Asp Asp Gly Ala Ser Gly Thr Pro Lys Glu Lys Lys Ala
 100 105 110
 Lys Thr Ser Lys Lys Lys Lys Arg Ser Lys Ala Lys Ala Glu Arg Glu
 115 120 125
 Ala Ser Pro Ala Asp Leu Pro Ile Asp Pro Asn Glu Pro Thr Tyr Cys
 130 135 140
 Leu Cys Asn Gln Val Ser Tyr Gly Glu Met Ile Gly Cys Asp Asn Asp
 145 150 155 160
 Glu Cys Pro Ile Glu Trp Phe His Phe Ser Cys Val Gly Leu Asn His
 165 170 175
 Lys Pro Lys Gly Lys Trp Tyr Cys Pro Lys Cys Arg Gly Glu Asn Glu
 180 185 190
 Lys Thr Met Asp Lys Ala Leu Glu Lys Ser Lys Lys Glu Arg Ala Tyr
 195 200 205
 Asn Arg
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<210> 7

<211> 235

<212> PRT

<213> Homo sapiens

<400> 7

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 Ala Leu Ile Arg Ser Gln Glu Leu Gly Asp Glu Lys Ile Gln Ile Val
 35 40 45
 Ser Gln Met Val Glu Ile Val Glu Asn Arg Thr Arg Gln Val Asp Ser
 50 55 60
 His Val Glu Leu Phe Glu Ala Gln Glu Leu Gly Asp Thr Val Gly
 65 70 75 80
 Asn Ser Gly Lys Val Gly Ala Asp Arg Pro Asn Gly Asp Ala Val Ala
 85 90 95
 Gln Ser Asp Lys Pro Asn Ser Lys Arg Ser Arg Arg Gln Arg Asn Asn
 100 105 110
 Glu Asn Arg Glu Asn Ala Ser Ser Asn His Asp His Asp Asp Gly Ala
 115 120 125
 Ser Gly Thr Pro Lys Glu Lys Lys Ala Lys Thr Ser Lys Lys Lys Lys
 130 135 140

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Ser | Lys | Ala | Lys | Ala | Glu | Arg | Glu | Ala | Ser | Pro | Ala | Asp | Leu | Pro |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 |
| Ile | Asp | Pro | Asn | Glu | Pro | Thr | Tyr | Cys | Leu | Cys | Asn | Cin | Val | Ser | Tyr |
| | | | | | 165 | | | | 170 | | | | | 175 | |
| Gly | Glu | Met | Ile | Gly | Cys | Asp | Asn | Asp | Glu | Cys | Pro | Ile | Glu | Trp | Phe |
| | | | | | 180 | | | | 185 | | | | | 190 | |
| His | Phe | Ser | Cys | Val | Gly | Leu | Asn | His | Lys | Pro | Lys | Gly | Lys | Trp | Tyr |
| | | | | | 195 | | | | 200 | | | | | 205 | |
| Cys | Pro | Lys | Cys | Arg | Gly | Glu | Asn | Glu | Lys | Thr | Met | Asp | Lys | Ala | Leu |
| | | 210 | | | 215 | | | | | | | | | 220 | |
| Glu | Lys | Ser | Lys | Lys | Glu | Arg | Ala | Tyr | Asn | Arg | | | | | |
| 225 | | | | | 230 | | | | | 235 | | | | | |

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32

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<211> 23
<212> DNA
<213> Homo sapiens
<400> 10
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23

<210> 11
<211> 21
<212> DNA

<213> Homo sapiens
<400> 11
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21

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23

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<210> 13  
<211> 23  
<212> DNA  
<213> Homo sapiens  
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23

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23

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<210> 15
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1908, 1915, 1933, 1970, 1976, and 2022
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<210> 16

<211> 512

<212> PRT

<213> Homo sapiens

<400> 16

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| 1 | | | | | | | | 5 | | | 10 | | | | 15 |
| Thr | Phe | Lys | Ala | Glu | Pro | Pro | Glu | Lys | Pro | Ser | Ala | Phe | Glu | Pro | Ala |
| | | | | | | | | 20 | | | 25 | | | | 30 |
| Ile | Glu | Met | Gln | Lys | Ser | Val | Pro | Asn | Lys | Ala | Leu | Glu | Leu | Lys | Aen |
| | | | | | | | | 35 | | | 40 | | | | 45 |
| Glu | Gln | Thr | Leu | Arg | Ala | Asp | Glu | Ile | Leu | Pro | Ser | Glu | Ser | Lys | Gln |
| | | | | | | | | 50 | | | 55 | | | | 60 |
| Lys | Asp | Tyr | Glu | Glu | Ser | Ser | Trp | Asp | Ser | Glu | Ser | Leu | Cys | Glu | Thr |
| | | | | | | | | 65 | | | 70 | | | | 80 |
| Val | Ser | Gln | Lys | Asp | Val | Cys | Leu | Pro | Lys | Ala | Thr | His | Gln | Lys | Glu |
| | | | | | | | | 85 | | | 90 | | | | 95 |
| Ile | Asp | Lys | Ile | Asn | Gly | Lys | Leu | Glu | Glu | Ser | Pro | Asp | Asn | Asp | Gly |
| | | | | | | | | 100 | | | 105 | | | | 110 |
| Phe | Leu | Lys | Ala | Pro | Cys | Arg | Met | Lys | Val | Ser | Ile | Fro | Thr | Lys | Ala |
| | | | | | | | | 115 | | | 120 | | | | 125 |
| Leu | Glu | Leu | Met | Asp | Met | Gln | Thr | Phe | Lys | Ala | Glu | Pro | Pro | Glu | Lys |
| | | | | | | | | 130 | | | 135 | | | | 140 |
| Pro | Ser | Ala | Phe | Glu | Pro | Ala | Ile | Glu | Met | Gln | Lys | Ser | Val | Pro | Asn |
| | | | | | | | | 145 | | | 150 | | | | 160 |
| Lys | Ala | Leu | Glu | Leu | Lys | Asn | Glu | Glu | Thr | Leu | Arg | Ala | Asp | Gln | Met |
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| Phe | Pro | Ser | Glu | Ser | Lys | Gln | Lys | Lys | Val | Glu | Glu | Asn | Ser | Trp | Asp |
| | | | | | | | | 180 | | | 185 | | | | 190 |
| Ser | Glu | Ser | Leu | Arg | Glu | Thr | Val | Ser | Gln | Lys | Asp | Val | Cys | Val | Pro |
| | | | | | | | | 195 | | | 200 | | | | 205 |
| Lys | Ala | Thr | His | Gln | Lys | Glu | Met | Asp | Lys | Ile | Ser | Gly | Lys | Leu | Glu |
| | | | | | | | | 210 | | | 215 | | | | 220 |
| Asp | Ser | Thr | Ser | Leu | Ser | Ile | Leu | Asp | Thr | Val | His | Ser | Cys | Glu | |
| | | | | | | | | 225 | | | 230 | | | | 240 |
| Arg | Ala | Arg | Glu | Leu | Gln | Lys | Asp | His | Cys | Glu | Gin | Arg | Thr | Gly | Lys |
| | | | | | | | | 245 | | | 250 | | | | 255 |
| Met | Glu | Gln | Met | Lys | Lys | Phe | Cys | Val | Leu | Lys | Lys | Lys | Leu | Ser | |
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 Glu Gln Glu Leu Cys Ser Val Arg Leu Thr Leu Asn Gln Glu Glu Glo
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 Lys Arg Arg Asn Ala Asp Ile Leu Asn Glu Lys Ile Arg Glu Glu Leu
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 Gly Arg Ile Glu Gln Gln His Arg Lys Glu Leu Glu Val Lys Gln Gln
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 Leu Glu Gln Ala Leu Arg Ile Gln Asp Ile Glu Leu Lys Ser Val Glu
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 Ser Asn Leu Asn Gln Val Ser His Thr His Glu Asn Glu Asn Tyr Leu
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 Leu His Glu Asn Cys Met Leu Lys Lys Glu Ile Ala Met Leu Lys Leu
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 Glu Ile Ala Thr Leu Lys His Gln Tyr Gln Glu Lys Glu Asn Lys Tyr
 385 390 395 400
 Phe Glu Asp Ile Lys Ile Leu Lys Glu Lys Asn Ala Glu Leu Gln Met
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 Thr Leu Lys Leu Lys Gln Glu Ser Leu Thr Lys Arg Ala Ser Gln Tyr
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 Ser Gly Gln Leu Lys Val Leu Ile Ala Glu Asn Thr Met Leu Thr Ser
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 Lys Leu Lys Glu Lys Gln Asp Lys Glu Ile Leu Glu Ala Glu Ile Glu
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Leu Thr Arg Gly Trp Gly Arg Ala Trp Pro Trp Lys Gln Ile Leu Lys
50 55 60
Glu Leu Asp Glu Cys Tyr Glu Arg Phe Ser Arg Glu Thr Asp Gly Ala
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Gin Lys Arg Arg Met Leu His Cys Val Gln Arg Ala Leu Ile Arg Ser
85 90 95
Gln Glu Leu Gly Asp Glu Lys Ile Gln Ile Val Ser Gln Met Val Glu
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Leu Val Glu Asn Arg Thr Arg Glu Val Asp Ser His Val Glu Leu Phe
115 120 125
Glu Ala Gin Gin Glu Leu Gly Asp Thr Val Gly Asn Ser Gly Lys Val
130 135 140
Gly Ala Asp Arg Pro Asn Gly Asp Ala Val Ala Gin Ser Asp Lys Pro
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Asn Ser Lys Arg Ser Arg Arg Gln Arg Asn Asn Glu Asn Arg Glu Asn
165 170 175
Ala Ser Ser Asn His Asp Asp Asp Gly Ala Ser Gly Thr Pro Lys
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Glu Lys Lys Ala Lys Thr Ser Lys Lys Lys Arg Ser Lys Ala Lys
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Ala Glu Arg Glu Ala Ser Pro Ala Asp Leu Pro Ile Asp Pro Asn Glu
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Pro Thr Tyr Cys Leu Cys Asn Gln Val Ser Tyr Gly Glu Met Ile Gly
225 230 235 240
Cys Asp Asn Asp Glu Cys Pro Ile Glu Trp Phe His Phe Ser Cys Val
245 250 255
Gly Leu Asn His Lys Pro Lys Gly Lys Trp Tyr Cys Pro Lys Cys Arg
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Gly Glu Asn Glu Lys Thr Met Asp Lys Ala Leu Glu Lys Ser Lys Lys
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Glu Arg Ala Tyr Asn Arg
290